

REMARKS/ARGUMENTS

Claims 1-6, 9, and 13-34 are pending.

Claims 9-10 and 13-15 have been amended.

Claims 1-6 and 16-27 have been withdrawn.

Claims 7-8 and 10-12 have been cancelled.

Claims 28-34 have been added.

Support for the amendments is found in the claims and specification (claims 7-15, page 18, line 42 to page 21, line 5), as originally filed.

No new matter is believed to have been added.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph. Claim 7 has been cancelled. It is believed that new claims 28, 30, 32, and 34 comprising the limitations of claim 7 are clear. Applicants request that the rejection be withdrawn.

Claim 7 is rejected under 35 U.S.C. 102(b) over GB 1,357,392 (the GB '391 patent).

Claims 8, 11-12, and 15 are rejected under 35 U.S.C. 103(a) over the GB '391 patent.

The rejections are traversed because the GB '391 patent does not describe or suggest a copolymer obtained by a copolymerization of at least:

(A) (a) 10-45 wt.%; 20-40 wt.%; 5-50 wt.%; 30-40 wt.%; or 7-45 wt.% of acrylamide and/or methacrylamide, and

(b) 60 to 90 wt.%; 40-70 wt.%; 40-85 wt.%; or 50-80 wt.% of  $\alpha,\beta$ -ethylenically unsaturated amide-containing compound of the formula I.

(B) One would not have modified the amount of acrylamide/methacrylamide of the GB '391 patent to be lower than 60 wt.% and, in addition, vinylpyrrolidone to be greater than 40 wt.% with a reasonable expectation of manufacturing a polymer dispersion suitable as a hydraulic binding agent (the goal of the GB '391 patent) because (i) the GB '391 patent

specifically suggest that the content of acrylamide/methacrylamide is 60-80 wt.% and of vinylpyrrolidone is up to 40 wt.% to improve the properties of hydraulic binding agents, (ii) the goal of the GB '391 is different, and (iii) the chemical arts are unpredictable.

(C) Also, the GB '391 patent teaches away from the claimed amount of the compound a and b.

The GB '391 patent does not anticipate the claimed copolymer.

The GB '391 patent specifically describes that the K values of suitable polymers is 60-150. This K value can be achieved by using polyvinylpyrrolidone having a K value of 60-100; polyacrylamide can having a K value of 60-150; copolymers of 40-60% of acrylamide and 60-40% of methacrylamide having a K value of 65-90%; copolymers of 60-80% of acrylamide and/or methacrylamide and 20-40% of vinylpyrrolidone having a K value of 100-140; and 60-80 parts of acrylamide and/or methacrylamide, 18-30 parts of vinylpyrrolidone, and 2-10 parts vinyl imidazole (page 3, left col., lines 5-19). Further, Example 5 describes a water-soluble polymer comprising 70 parts of methacrylamide, 27.5 parts of vinylpyrrolidone, and 2.5 parts of vinyl imidazole.

Thus, the GB '391 patent does not describe a copolymers comprising less than 60% of acrylamide/methacrylamide and, in addition, greater than 40% of vinylpyrrolidone.

In addition, the GB '391 patent does not describe a co-polymer comprising d2 (comprising repeat units of a vinyl alcohol) as a monomer (as in claims 9 and 13). The GB '391 patent describe using a vinyl *aromatic* monomer, e.g., styrene (page 1, lines 86-88 to page 2, line 2, Example 1).

Thus, the GB '391 patent does not anticipate the claimed copolymer.

The GB '391 patent does not make the claimed copolymer obvious.

(i) The GB '391 patent teaches away from the claimed amount of monomers because the GB '391 patent specifically suggest using the higher content of

acrylamide/methacrylamide and, in addition, the lower content of vinylpyrrolidone (as set forth above).

(ii) One would not have modified the amount of acrylamide/methacrylamide and, in addition, vinylpyrrolidone to be lower than 60% and greater than 40%, respectively, because (a) the GB '391 patent specifically describes that the K values of suitable polymers is 60-150 which are achieved by the high content (60-80%) of acrylamide and/or methacrylamide and up to 40% of vinylpyrrolidone (page 3, left col., lines 2-19 and col. 5, lines 12-20), and (b) the claimed copolymer and the polymers of the GB '391 patent achieve different goals. Specifically, the K values of 60-150 of the polymers of the GB '391 patent are suitable for improving hydraulic binding agents used as gypsum, mortars and concrete (page 1, lines 10-17), while the claimed copolymer is able to form smooth, tack-free films which give the hair a pleasant feel and conditioning effect and setting action in cosmetic compositions and is also suitable for products in a gel form (see pages 1-2 of the present specification).

(iii) One would not have reasonably expected improving (or preserving) the properties of the copolymer of the GB '391 patent by changing the content of monomers to a range outside the range specifically suggested by the GB '391 patent because the chemical arts are unpredictable and the K values are not necessarily 60-150 as required for the hydraulic binding agent of the GB '391 patent when the ranges of the monomers have been significantly altered (pages 1 and 3 of the GB '391 patent).

One would not have reasonably expected achieving the claimed copolymer that is able to form smooth, tack-free films which give the hair a pleasant feel and conditioning effect and setting action in cosmetic compositions and is also suitable for products in a gel form by modifying the copolymer of the GB '391 patent because the copolymers are different and serve to a different purpose and also there are unlimited variations in which the copolymers

of the GB '391 patent can be modified for different purposes and results if the modifications are unpredictable. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct 1727 (2007).

In a recent decision, the Board stated that “[t]o the extent an art is unpredictable, as the chemical arts often are, *KSR*’s focus on these “identified, predictable solutions” may present a difficult hurdle because potential solutions are less likely to be genuinely predictable.” *Eisai Co, Ltd. v. Dr. Reddy’s Lab.*, 87 USPQ2d 1452, 1457, 533 F.3d. 1353 (Fed. Cir., 2008). Applicants request that the rejection be withdrawn.

The inventors have surprisingly found that the copolymers of the invention used in cosmetic formulations give clear gel formulations with good conditioning or setting action (see pages 3 of the present specification), while the GB '391 patent achieves aqueous polymer dispersions with good application properties in hydraulic binding agents (page 1, lines 80 – 82).

(1) Claims 7-10 are rejected under 35 U.S.C. 103(a) over Lede et al., US 2001/0026791.

(2) Claims 9-10 and 13-14 are rejected under 35 U.S.C. 103(a) over the GB '391 patent and Lede et al. The rejections are traversed because Lede et al. do not describe or suggest:

- (A) selecting the claimed ranges of the monomers a, b, c and d2;
- (B) (i) one would not have been motivated to modify the copolymers of Lede et al. to arrive at the claimed copolymers because a goal of Lede et al. is to provide good fixing properties without adding an excess of thickeners to an aqueous spray formulation, while the claimed copolymer is able to form smooth, tack-free films which give the hair a pleasant feel and a conditioning effect and a setting action in cosmetic compositions;

(ii) one would not have reasonably expected that modifying the spray composition of Lede et al. would have provided the properties of the claimed copolymer because (a) the chemical arts are unpredictable and (b) there are unlimited variations in which the copolymers of Lede et al. can be modified for different purposes and results of the modifications are unpredictable;

(ii) one would not have been motivated to modify the copolymers of Lede et al. to use a different content of monomers with a reasonable expectation to preserve/improve the properties of the composition of Lede et al. because Lede et al. specifically suggest using 0.01-20 wt.% of the total content of the co-monomers for achieving the Lede et al.'s goal, i.e., providing good fixing properties without adding an excess of thickeners to an aqueous spray formulation.

(D) Lede et al. teach away from the claimed content of the monomers,

(E) modifying the content of the monomers of the Lede et al. composition is not routine because the cited art does not recognize that obtaining smooth, tack-free films which give the hair a pleasant feel and conditioning effect and setting action is a function of the content of the monomers.

The disclosure of the GB '391 patent is described above. The GB '391 patent does not describe or suggest the claimed amount of the monomers, as set forth above.

Lede et al. alone or in combination with the GB '391 patent does not cure the deficiency.

(1) (A) Lede et al. do not describe selecting the claimed ranges of the monomers (e.g., a, b, and d2).

Lede et al. describe a large number of possible monomers for using in a gel hair composition (see [0006] and [0016]-[0026]). Lede et al. a spray composition comprising at least one terpolymer of vinylpyrrolidone, vinyl caprolactam and a basic acrylamide monomer

(see claim 1). Lede et al. also describe that one of the numerous monomers can be vinyl alcohol [0016]. The Lede et al. composition provides good fixing properties without adding an excess of thickeners to an aqueous spray formulation [0005]-[0006]. The total content of the terpolymers is 0.01-20 wt.% (see paragraph [0012], the Examples and claim 3). In all the Examples the content of Aquaflex® SF 40 is not greater than 5 wt. %.

However, Lede et al. do not describe the claimed amount of the monomers, e.g., the claimed monomers a, b, c, and d2.

(B) One would not have been motivated to modify the copolymers of Lede et al. to arrive at the claimed copolymers or preserve/improve the properties of the composition of Lede et al. with a reasonable expectation of success.

(i) One would not have been motivated to modify the copolymers of Lede et al. to arrive at the claimed copolymers because the goal of Lede et al. is to provide good fixing properties without adding an excess of thickeners to an aqueous spray formulation, while the claimed copolymer is able to form smooth, tack-free films which give the hair a pleasant feel and conditioning effect and setting action in cosmetic compositions.

(ii) One would not have reasonably expected that modifying the spray composition of Lede et al. would have provided the properties of the claimed copolymer because (a) the chemical arts are unpredictable and (b) there are unlimited variations in which the copolymers of Lede et al. can be modified for different purposes and results of the modifications are unpredictable. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct 1727 (2007).

Also, in a recent decision, the Board stated that “[t]o the extent an art is unpredictable, as the chemical arts often are, *KSR*’s focus on these “identified, predictable solutions” may present a difficult hurdle because potential solutions are less likely to be

genuinely predictable.” *Eisai Co, Ltd. v. Dr. Reddy’s Lab.*, 87 USPQ2d 1452, 1457, 533 F.3d. 1353 (Fed. Cir., 2008).

(ii) One would not have been motivated to modify the copolymers of Lede et al. to use a different content of monomers with a reasonable expectation to preserve/improve the properties of the composition of Lede et al. because Lede et al. specifically suggest using 0.01-20 wt.% of the total content of the co-monomers for achieving the Lede et al.’s goal, i.e., providing good fixing properties without adding an excess of thickeners to an aqueous spray formulation.

(D) Lede et al. teach away from the claimed content of the monomers.

Lede et al. teach away from the claimed content of the monomers (e.g., the claimed monomers a, b, c, and d2) because Lede et al. specifically suggest using 0.01-20 wt.% of the total content of the co-monomers (claim 1).

(E) Modifying the content of the monomers of Lede et al. is not routine.

For optimizing the amount of the monomers, the prior art must first recognize a particular parameter as a result-effect variable, i.e., that obtaining smooth, tack-free films which give the hair a pleasant feel, conditioning effect and setting action is a function of the amount of the monomers. MPEP 2144.05. II, e.g., *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Lede et al. do not recognize these dependencies. In fact, the claimed monomers a and b (or a, b, and c; or a, b, c, and d2) are not even required in the Leder et al. spray. Lede et al. describe that *at least one* (which can be only one) terpolymer of vinylpyrrolidone, vinyl caprolactam and a basic acrylamide monomer (see claim 1).

In a recent decision, the Board stated that while the discovery of an optimum value of a variable in a normally obvious, this is not always the case. *Ex parte Thomas*, Appeal 2007-4423 (July 23, 2008). One exception to the rule is where the parameter optimized was not recognized in the prior art as one that would affect the results. *Id.* The Examiner has to point

to a teaching in the cited reference or provide any explanation based on scientific reasoning, that would support the conclusion that those skilled in the art would have considered it obvious to optimize the prior art composition *to the level recited in the claims. Id.*

Thus, optimizing the claimed copolymers is not routine.

(2) Concerning the rejection of 9-10 and 13-14 rejected under 35 U.S.C. 103(a) over the GB '391 patent and Lede et al., substituting the disclosure of Lede et al. into the copolymer of the GB '391 patent still does not provide the claimed copolymers because neither the GB '391 patent nor Lede et al. describe the claimed amount of the monomers and modifying the copolymers of the GB '391 patent and/or Lede et al. is not obvious as explained above.

In addition, one would not have been motivated to modify the copolymers of the GB '391 patent which (i) improves hydraulic binding agents used in gypsum, mortars and concrete (ii) comprise 60-80 wt.% of acrylamide/methacrylamide, with the monomers of Lede et al. (iii) used in a spray hair composition and comprising (iv) 0.001-20% of at least one terpolymer of vinylpyrrolidone, vinyl caprolactam and a basic acrylamide monomer because the copolymers are used for different purposes, provide different properties, and comprise a mutually exclusive amount of the monomers (60-80 wt.% verses 0.001-20%).

One would not have reasonably expected to obtain the claimed copolymer by the modification because (a) the copolymers comprise a different content of the monomers (e.g., 60-80 wt.% of acrylamide/methacrylamide in the GB '391 patent verses 0.001-20% in Lede et al. verses, for example, 20-40 wt.% or 30-40 wt.% in the claimed co-polymer), and (b) the properties of the co-polymers are different (e.g., improving hydraulic binding agents used in gypsum, mortars and concrete in the GB '391 patent; providing good fixing properties without adding an excess of thickeners to an aqueous spray formulation in Lede et al., and



forming smooth, tack-free films which give the hair a pleasant feel and conditioning effect and setting action in cosmetic compositions of the claimed copolymer).

Thus, Lede et al. alone or in combination with the GB '391 patent do not make the claimed co-polymer obvious. Applicants request that the rejection be withdrawn.

Claims 7-8 and 12-14 are rejected on the ground of nonstatutory obviousness-type double patenting over claims 1 and 12 of US 5,869,032.

Claim 1 of the '032 patent is directed to a polymers obtained by a co-polymerization of (1) 7-20% 1-vinylimidazole, (2) 40-60% N-vinylcaprolactam, (3) 20-50% N-vinylpyrrolidone, and (4) 0-15% of acrylamides and/or methacrylamides. The copolymer of the '032 patent is used in the form of *foams* and imparts a permanent curl retention to the hairstyle, gives rise to a good hair sensation (good feel, good body and low hair tack), prevents the build up of the static charge, has a conditioning action, and improves the wet combability of the hair (col. 1, lines 20-33).

Claims 9, 13-15, and 28-34 of the present application comprise a different amount of the monomers "a" (acrylamides and/or methacrylamides), "b" (e.g., vinylpyrrolidone and/or vinylcaprolactam), and/or "c" (e.g., vinylimidazole). Also, claims 9 and 13 comprise 1-20% and 0.1-10% of a vinyl alcohol (the monomer d2), respectively.

The polymers of Claims 1 and 12 of the '032 patent do not comprise a vinyl alcohol.

The Examiner is of the opinion that modifying the amount of the monomers of Claim 1 of the '032 patent is obvious. Applicants respectfully disagree.

One would not have reasonably expected to achieve the claimed co-polymer having specific properties by modifying the content of the monomers of claims 1 or 12 of the '032 patent because:

(A) One would not have been motivated to modify the polymer of the '032 patent because the specific properties of the polymer (i.e., permanent curl retention, body, prevention of the build up of the static charge, a conditioning action, the wet combability of the hair) are obtained by a specific combination of the monomers as in claims 1 and 12 of the '032 patent, and the properties of the claimed co-polymers are different.

(B) One would not have reasonably expected to improve/preserve the properties of the polymer of the '032 patent or to achieve the properties of the claimed co-polymer by modifying the content/composition of the monomers of the '032 patent because (i) the claimed co-polymers have different properties, (ii) the polymer of the '032 patent has already been adjusted to have optimized properties for its intended use, (iii) chemical arts are unpredictable, and (iv) there is an unlimited number of modifications of the polymers of the '032 patent to try depending on a goal and results of the modifications are unpredictable.

(C) The modification to achieve the claimed co-polymers is not routine because the '032 patent does not recognize that forming smooth, tack-free films which give the hair a pleasant feel and conditioning effect and setting action in cosmetic compositions of the claimed copolymer is a function of the content/composition of the monomers. Claim 1 of the '032 patent does not even require acrylamides or methacrylamides and, also, vinyl alcohol.

Thus, claims 1 and 12 of the '032 patent does not make the present claims obvious. Applicants request that the rejection be withdrawn.

Claims 7-8 and 12-14 are rejected on the ground of nonstatutory obviousness-type double patenting over claims 11 and 15 of the co-pending application 11/576,612.

Claims 11 and 15 of Appl. '612 are cancelled. Claims 26-49 are directed to (i) an aqueous solution comprising one or more components selected from copolymers of N-

vinylpyrrolidone and a measurable content of hydrogen peroxide, and (ii) a method of combining N-vinylpyrrolidone with hydrogen peroxide.

The claims of the present application are directed to a copolymer obtained by free-radical copolymerization of *at least*: a) 10 to 45% of acrylamide and/or methacrylamide, and b) 60 to 90% of at least one  $\alpha,\beta$ -ethylenically unsaturated amide-containing compound of the formula I.

Thus, the claims of Appl. '612 do not make the claimed co-polymer obvious. Applicants request that the rejection be withdrawn.

A Notice of Allowance for all pending claims is requested.

Respectfully submitted,

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